



Fuseini, A., & Knowles, T. G. (2020). The ethics of halal meat consumption: preferences of consumers in England according to the method of slaughter. *Veterinary Record*, 186(644).  
<https://doi.org/10.1136/vr.105287>

Peer reviewed version

Link to published version (if available):  
[10.1136/vr.105287](https://doi.org/10.1136/vr.105287)

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PDF-document

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**The ethics of Halal meat consumption: Consumer preference according to the method of slaughter in England.**

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**Abstract**

**Background.** The continued growth of the global Halal meat market has resulted in many mainstream businesses in the developed world trading in Halal products. A good understanding of Halal consumer behaviour with regard to their preference of meat according to the method of slaughter (pre-stunned or not) and the frequency of consumption is vital for the formulation of future animal welfare legislations.

**Methods.** In this study, 250 Halal meat consumers in England were surveyed to get a better understanding of their meat consumption frequency, preference of meat according to species of animals and the method of slaughter.

**Results.** The results show that the majority of consumers ate meat at least once a week (50.8%), 45.6% at least once a day, 3.2% at least once a month and 0.4% ate meat occasionally. Poultry meat was marginally the most preferred meat among respondents overall, followed by lamb and beef with the majority of respondents (approximately 70%) indicating preference for meat from animals slaughtered without stunning over those stunned prior to slaughter. There were gender differences within some responses.

**Conclusion.** The results give an insight into Halal consumer behaviour, and may be useful to retailers, animal welfare charities and Government.

**Keywords**

Halal meat; Stunning; Slaughter; Animal Welfare; Beef; Lamb;

**1. Introduction**

The economic significance of the global Halal meat market is huge, and it is projected to continue to expand (1-3). This has resulted in the scramble for a share of the market by mainstream retail multiples such as Tesco, Sainsbury's, Morrisons, Asda, etc. While some researchers have attributed the rapid growth of this segment of the EU meat industry to the exponential growth in the population of Muslims within the EU, in part due to the exodus of Muslims (the main Halal consumers) from unstable democracies into Europe (4). Additionally, the UK's English Beef and Lamb Executive (EBLEX) (5) noted that Muslims generally consume above average quantities of meat. For example, the EBLEX study reported that although the Muslim population accounts for approximately 5% of the population of England, Muslims account for over 20% of sheep meat consumption. The number of sheep slaughtered in the UK is currently circa 14 million. These findings corroborate the results of the UK's Food Standards Agency's 2015 (6) Animal Welfare Survey which found that Halal slaughter in Great Britain accounted for over 40% of the total of all small ruminants slaughtered and this figure had increased to 70% in 2018, according to recent data published by the FSA (7). In terms of the future prospects of the EU Halal meat market and the Muslim population size, the Pew Research Centre (4), projected that even with zero further migration into Europe, the Muslim population would still grow from the current 4.9% to approximately 7.4% by the year 2050. This projection was made on the basis that it is a younger population (approximately a mean of 13 years younger) with accompanying higher fertility rate, with women having approximately a mean of one additional child greater than the remainder of the population. For meat to be considered Halal, it is stipulated that it must be from animals slaughtered in accordance with rules derived from the Quran and other Islamic scriptures. Generally, the rules require animals to be alive and fit but not necessarily conscious at the point of neck-cutting, although some Muslim authorities do insist the animals be fully conscious (8). In addition to meeting the Halal rules, slaughter practices must, of course, comply with the legislative

requirements of the country where the slaughter takes place. For example, the slaughter of animals within the EU is regulated by European Council Regulation EC1099/2009. This regulation requires the stunning of all animals prior to slaughter in order to induce immediate loss of consciousness and loss of sensibility before neck-cutting. This is because slaughter without stunning has been shown to compromise the welfare of animals (9-11) due to the pain and distress caused during and following the neck cut. Gibson and colleagues (9) investigated the perception to pain in halothane anaesthetized calves that were slaughtered by ventral neck incision without stunning. They objectively recorded the perception of pain through electroencephalographic responses to the neck cut and concluded that ventral neck incision without stunning represents a noxious stimulus. In cattle, ballooning of the cut ends of the carotid arteries (false aneurysm) may occur, leading to delayed loss of brain function due to the continued supply of oxygenated blood to the brain through an alternative route of blood supply, through the vertebral arteries (12). In fact, it has been shown that the average time for the start of early arrested blood flow (in the carotid) is 21 s (12). To reduce the incidence of false aneurysm and its effect on delayed loss of consciousness and suffering during slaughter without stunning, Gibson and colleagues (13) demonstrated that using a high neck cut position instead of the conventional low neck cut in cattle reduced the time to collapse. The authors implied that collapse of cattle after neck incision is an indication of the initiation of the start to loss of consciousness. A high neck cut position was defined as a cut that corresponded to the position of the first cervical vertebra (C1), whilst a low neck cut corresponded to the second cerebral vertebra (C2).

It is worth noting, however, that despite the controversial nature of slaughter without stunning, EC1099/2009 permits member states to exempt from stunning the slaughter of animals performed according to religious rites. This option is mainly practiced by followers of Judaism and Islam. Despite this exemption from stunning, the majority of Halal meat in Europe is

derived from stunned animals (6, 7), to the contrary, the Jewish community unanimously reject all forms of stunning prior to slaughter. According to the UK's FSA, 25% of sheep were slaughtered without stunning in 2018 (7), an increase of 10% from the proportion slaughtered without stunning in 2012, which was reported to be 15% (6). Halal slaughter of broilers accounted for 21% of the throughput with 41% of these slaughtered without any form of stunning. The proportion of cattle slaughtered in accordance with religious rites (i.e. Halal and Kosher) was relatively low, only 3.7% of the 35,343 cattle slaughtered during the study period were killed in accordance with the Halal and Kosher rules, of which 1.1% were not stunned prior to the neck cut (7). Some researchers have suggested that the slaughter of animals without stunning is equally as humane as slaughter with stunning. Grandin and Regenstein (14) observed the slaughter of some 3000 cattle and formula-fed calves in three Kosher abattoirs in the US and concluded that it is possible for animals to show little or no reaction to the cut when very careful, specific handling and restraint is applied and an especially sharp, clean blade is used. They noted further that there was only a slight 'flinch' when the neck was cut, suggesting that the procedure was relatively painless. Contrary to many other authors, Rosen (15) concluded after a review of physiological evidence that Shechita slaughter is a painless method of slaughter, and that the method could be regarded as a 'stun' procedure.

A survey of Islamic scholars and Halal consumers in the UK found that the majority of Halal consumers (53%) and scholars (95%) would regard meat from stunned animals as Halal if it could be shown that animals did not die as a consequence of the stun, but died as a consequence of bleeding-out from the neck cut (8). The authors recommended that there should be a dialogue and education of Islamic scholars on the different methods of stunning so that they could make informed decisions in recognising stunning methods that do not result in the instantaneous death of the animals.

The objective of this study was to examine the frequency of meat consumption in a representative sample of Halal consumers in England and their preference for meat based on the species of animal. It further considered the preference of Halal consumers for meat based on the method of slaughter (slaughter with and without stunning). As far as the authors are aware, there is no existing study of this topic.

## **2. Materials and methods**

### **2.1. Data collection and sampling procedure**

A total of 250 Halal consumers were surveyed from 11<sup>th</sup> March 2017 to 1<sup>st</sup> January 2018. All respondents fully consented to participate in the survey and were provided with information on the aims and objectives of the study. Two volunteers from Birmingham and London were each given one hundred hard copies of the questionnaire, 46 and 43 fully completed questionnaires were returned from Birmingham and London, respectively. The volunteer from Birmingham was recruited through a mosque (in Birmingham), and was a male teacher of Arabic and the Quran aged 58 at the time of the survey. The second volunteer (from Moredon in the London Borough of Merton) was recruited through word of mouth and was a 37 years old male undergraduate student. The remainder of the respondents were recruited by sharing a SurveyMonkey weblink to Muslim WhatsApp groups (n=90), Facebook (n=67) and email (n=4). Ethical approval was granted for this study by the University of Bristol's Ethical Review Committee (ID49821).

### **2.2. Data analysis**

Responses to questions are reported as percentages of respondents, with the actual numbers contributing in brackets, following. Exact Chi square tests were used to test for associations between categorical variables.

## **3. Results**

The majority of respondents answered all the questions, no respondent was dropped from the overall analysis, however, where there were occasional missed questions, those respondent(s) were not included in the count. For the purpose of the analysis, these were treated as missing at random. Note that the count will decrease where missing values appear within the calculation. Absolute values are used in all calculations, except where data are missing. Exact p values are reported for Chi-Sq. tests. The socio demographic characteristics of respondents included 67.5% [166] male, 32.1% [79] female and 0.41% [1] other, of which 46.4% [115], 27.8% [69], 12.5% [31], 7.3% [18], 3.6% [9] and 2.4% [6] fell within the age ranges 31-40, 41-50, 20-30, 51-60, Over 60 and less than 20, respectively. The majority of respondents (87.0%) [215] reported being married while 13% [32] were single. Of the male respondents, 13.4% [22] were single whilst 86.6% [142] were married whilst 12.7% [10] of female respondents were single and 87.3% [69] married. There was no imbalance between gender and marital status (i.e. whether respondents were single or married and male or female) with approximately 13% of both sexes being single (Chi Sq = 0.178, df = 2, p value = 1.00). The highest academic qualifications of respondents were; postgraduates 37.8% (94), graduate 32.9% [82], further education qualification 12.9% [32], GCSE/O-Level 8.4% [21], A-Level 5.6% [14] and respondents with no academic qualifications 2.4% [6]. A high proportion of respondents were in employment, with 84.3% [210] reported as employed and 15.7% [39] unemployed.

**Table 1: Distributions of responses to various questions regarding Halal meat consumption preferences in the UK**

		Frequency	Percent
How often do you eat meat? (Two respondents did not answer this question)	At least once a day	113	45.6
	At least once a week	126	50.8
	At least once a month	8	3.2
	Occasionally (e.g. during special occasions such as Eid)	1	0.4
Which of the following is your preferred meat?	Beef	13	5.5

(Twelve respondents did not answer this question)	Lamb	109	45.8
	Poultry	116	48.7
Animals may be pre-stunned or post-cut stunned during Halal slaughter. Do you understand what these procedures mean? (Four respondents did not answer this question)	No I do not understand what pre-slaughter stunning and post-cut stunning mean	52	21.1
	Yes I understand what pre-slaughter stunning and post-cut stunning mean	194	78.9
Which of the following is your preferred method of Halal slaughter (Assuming the slaughter is performed by a Muslim in all cases)? (Four respondents did not answer this question)	Pre-stunned slaughter on condition that the animal was alive at the point its neck was cut.	35	14.2
	Slaughter without stunning	172	69.9
	Post-cut stunned slaughter (This is where a live animal is slaughtered followed by stunning)	1	0.4
	I do not understand what the above slaughter methods mean	16	6.5
If your preferred method of Halal slaughter is NOT pre-stunned or post-cut stunned (in Q16), please indicate your reason? (Thirty one respondents did not answer this question)	I am unsure about the Halal status of meat from animals pre-stunned/post-cut stunned	100	45.7
	I do sometimes eat meat from pre-stunned/post-cut stunned animals if there is no unstunned alternative	52	23.7
	I regard meat from animals pre-stunned/post-cut stunned as Haram (Prohibited)	46	21
	Not applicable- My preference is meat from stunned animals	21	9.6

Note: The percentages for each of the categories do not necessarily sum to 100 due to missing data.

Table 1 shows the distribution of responses to the questions on frequency of meat consumption, preference of meat according to species and preference according to the method of slaughter. The majority of respondents (50.8%) [126] indicated that they eat meat at least once a week, 45.6% [113] eat meat at least once a day, 3.2% [8] eat meat at least once a month and only 0.4% [1] of respondents indicated that they eat meat occasionally, for example during special religious festivals. Two respondents did not answer this question. These figures suggest that the majority of Halal consumers (96.4%) eat meat at least once daily or weekly. On where they usually purchase their meat, the majority of respondents indicated purchasing their meat from



154 local Muslim butchers 85.4% [210]. The rest of the respondents indicated that they usually  
 155 purchase their meat from; Muslim butchers in mainstream supermarkets (e.g. Tesco,  
 156 Sainsbury's etc.) 7.3% [18], directly from Halal abattoirs 5.3% [13] and from non-Muslim  
 157 butchers 2.0% [5]. Four respondents did not indicate where they usually purchase their meat.  
 158 The preference for meat with relation to the species of animal, that is, beef (from cattle), lamb  
 159 (from sheep) and poultry meat is reported in table 1. The question was not answered by 12  
 160 respondents. The results showed 48.7% [116] preferred poultry meat (chicken, turkey etc.),  
 161 45.8% [109] lamb and 5.5% (13) beef. However, this result hides a gender imbalance; females  
 162 had a greater preference for chicken meat, and males a slightly greater preference for beef and  
 163 lamb than females ( $\chi^2 = 10.25$ ,  $df = 4$ ,  $p = 0.066$ ). The preference for meat based on gender  
 164 were; beef (7.5% male and 1.4% female), lamb (49.4% male and 36.5% female) and poultry  
 165 meat (43.1% male and 62.2% female). On preference of meat according to the method of  
 166 slaughter, the results show that the majority of respondents preferred meat from animals  
 167 slaughtered without stunning 69.9% [172], whilst 14.2% [35] indicated preference for meat  
 168 from animals stunned prior to slaughter if animals were alive at the point of neck-cutting, 0.4%  
 169 [1] reported preference for meat from animals stunned after neck-cutting whilst 6.5% [16] of  
 170 respondents indicated that they did not understand the meaning of the three methods of  
 171 slaughter described and 8.9% [22] indicated that they had no preference across the three  
 172 methods of slaughter (animals slaughtered without stunning, those stunned before slaughter  
 173 and those stunned after neck-cutting). Of the 68.5% of respondents who did not prefer meat  
 174 from stunned animals, the reasons for the rejection of meat from stunned animals included; i)  
 175 I am unsure about the Halal status of meat from stunned animals 45.7% [100], ii) I do  
 176 sometimes consume meat from pre-stunned/post-cut stunned animals if there is no unstunned  
 177 alternative 23.7% [52] and iii) I regard meat from animals pre-stunned/post-cut stunned as  
 178 Haram (prohibited) 21.0% [46]. Respondents were also asked whether they understood what

the two stunning methods meant (pre-stunned slaughter and post neck-cut slaughter), to which 78.9% [194] said they did whilst 21.1% [52] indicated that they did not. Four respondents did not answer this question.

The majority of male respondents indicated their preference for meat from animals slaughtered without stunning 70.7% [116] over meat from pre-stunned animals. The preference for method of slaughter by female respondents was approximately similar at 67.9% [53] for slaughter without stunning

## **Discussion**

Muslims are enjoined to consume meat from animals slaughtered in accordance with the rules of Halal. The rules stipulate that at the time of exsanguination, animals must be alive and that sufficient time must be allowed for thorough bleeding-out because the consumption of blood is prohibited (16). The results of this study show that the majority of respondents consume meat on a regular basis, indeed 96.4% of respondents indicated that they consume meat at least once a week or daily. This corroborates the results of previous studies where Halal consumers were reported to consume above average amounts of meat, which has contributed, in addition to population growth, to the expansion of the global Halal meat market (6,17,18,19). Culture, religion and gender have been identified as the two main factors influencing meat consumption patterns (19, 20). EBLEX (5) reported that the Muslim community in England, which represents an estimated 5% of the population, consume around 20% of sheep meat produced in England. Halal slaughter of sheep represents an estimated 70% of the over 14 million sheep killed annually in Great Britain, according to data from the UK's FSA (7). In terms of preference for meat based on the species of animals, the results of the present study show that the majority of respondents overall, marginally prefer poultry meat (approximately 48.7%), whilst 45.8% indicated a preference for lamb and 5.5% for beef. This is consistent with the findings of the report published by EBLEX (5) and it also partly explains the throughput figures

published by the UK's Food Standards Agency (6) in which the proportion of animals slaughtered according to the Halal rules in Great Britain were; 41%, 21% and 3% for small ruminants (sheep and goats), poultry and cattle, respectively. Poultry meat provides convenience and versatility, which may explain why some consumers prefer this particular source of protein. The results showed greatest female preference was for chicken meat, and male a slightly greater preference for beef and lamb. This corroborates the findings of a study by Kubberød and colleagues (21) who reported that the majority of female respondents indicated their preference for white meat over red meat in a study carried out in Norway. Kenyon & Barker (22) reported that young female consumers found red meat repulsive because the reddish colour is associated with blood, and that it is hard to digest and does not help in weight loss. Despite the reported negative impact on the welfare of animals during slaughter without stunning (9-11), the majority of respondents indicated their preference for meat from animals slaughtered using this method. In fact, 69.9% of respondents indicated their preference for meat from animals slaughtered without stunning whilst 14.6% preferred meat from stunned animals (pre-stunned and post-neck-cut stunned). Halal consumer preference for meat from animals slaughtered without stunning has been reported previously (23). Farouk et al. (23) suggested that some Halal consumers regard such meats as having a high spiritual quality because it is the only method which was practiced by the Prophet of Islam some 1,400 years ago. It is worth noting however, that stunning is a relatively new slaughter technology which was discovered many centuries after the *Quran* (Islamic Holy Book which contains the Halal slaughter rules) was revealed. It has been suggested that some Muslims avoid meat from stunned animals because of doubts over the compatibility of stunning with the Halal rules, that is, the possibility of some animals dying as a consequence of the stun or the belief that stunning obstruct blood loss (8, 23, 24, 25, 26).

When compared with the general UK population, a number of consumer studies on attitudes towards animal welfare have concluded that there is public concern for animal welfare (27, 28, 29). These findings are in contrast to the results of the current study, where the majority of respondents consuming Halal meat preferred meat from animals slaughtered without stunning. The preference for meat slaughtered without stunning appear to be influenced by religion and cultural beliefs. Schroder and McEachern (27) explained that despite showing concern for animal welfare, UK consumers try to disengage with on-farm procedures that may affect animal welfare, or the welfare aspect of transport and slaughter. Tawse (28) on the other hand observed that despite a recent rise in concern for animal welfare in the UK, this did not reflect in a rise in the purchase of meat or other animal products that are perceived to originate from high welfare systems. One may therefore argue that despite having a concern for animal welfare, many UK consumers may not have a good understanding of the slaughter process, this may affect their choice of meat from stunned or non-stunned animals as observed in the Muslim population in the current study. Additionally, cultural and religious factors may have influenced the results in the present study.

New Zealand introduced a Halal quality assurance system which permits abattoirs to conduct annual reversibility demonstrations on stunned animals to assure Muslims that some methods of stunning (e.g. electrical head-only) do not result in the death of animals prior to the neck cut, and to highlight the fact that death is caused by blood loss. To increase consumer confidence in stunned products, the UK may need to consider a similar model to the New Zealand system. Fuseini and others (8) carried out a survey of Islamic scholars and Halal consumers in the UK to understand the reasons for the rejection of meat from stunned animals, the majority of scholars (95%) and consumers (53%) indicated that they would accept stunning if it could be shown that animals did not die as a result of the stun, and that the volume of blood loss was not negatively affected. There are, however, a number of studies showing that head-

only electrical stunning does not cause instantaneous death of animals, and that, whether animals are stunned or not, does not have any effect on the volume of blood loss (24, 30). In the present study, whilst 78.9% indicated that they understood the meaning of all 3 methods of Halal slaughter (pre-stun, post neck cut stun and slaughter without stunning), 21.1% did not. This collaborates the findings of Fuseini and others (8) who reported that some Islamic scholars did not have a good understanding and perception of the different methods of stunning. Consumer education on the methods of slaughter may be useful in helping consumers make informed decisions about the compatibility of some stunning methods with the Halal rules. The 69.9% of respondents who indicated that they did not prefer meat from stunned animals gave the following reasons for their responses; 45.7% avoided meat from stunned animals because they were unsure about the compatibility of such meats with the Halal rules, 23.7% indicated that they would only eat stunned Halal meat if they didn't have a non-stunned option whilst 21% regarded meat from stunned animals *Haram* (prohibited). It can be deduced from the above that the 21% who regarded meat from stunned animals as *Haram* will almost always avoid such meats, however the 45.7% who were unsure about the Halal status of stunned meat and the 23.7% who would eat stunned meat if there was no non-stun alternative are more likely to be persuaded to consume meat from stunned animals if they could be given assurance that some forms of stunning (e.g. electrical head-only) were compatible with the Halal rules. In the present study, 37.8% and 32.9% of respondents indicated that they held postgraduate and graduate qualifications respectively, this is higher than the data reported in the UK Islamic Economy Report by Thomson Reuters (31). The report suggested that the proportion of UK Muslim degree holders was 24%, against 27% of UK degree holders. Therefore, one of the limitations of the data in the present study is the high proportion of educated Muslims surveyed, this may have affected how representative the data is of UK Muslims.

#### 4. Conclusion

The Halal meat sector is one of the fastest growing segments of the meat industry. However, there are animal welfare issues associated with the slaughter of animals without stunning. Many Muslims appear to prefer meat from animals slaughtered without stunning, however, the majority of these are either unsure of the Halal status of meat from stunned animals or they are ‘part-time’ stunned meat consumers who will eat meat from stunned animals if there was no non-stun alternative. Education of Halal consumers on the different slaughter methods is important in enabling them make informed choices when purchasing meat. There appear to be a significant effect of gender on the choice of meat based on the method of slaughter. Poultry meat appeared to be the most popular meat followed by lamb and beef, with female respondents indicating a greater preference for white meat over red meat. The results of this study provide an insight into the purchasing patterns of Halal consumers which can be utilised by mainstream supermarkets and independent retailers in formulating future marketing strategies. The findings are also useful to the veterinary profession and the government in formulating future animal welfare legislations regarding religious slaughter.

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